REMARKS

In the foregoing amendments, claims 6, 7, 19, and 20 are amended; and claims 21 and 22 are added. Claims 1-22 are now pending in the present application.

Response to 35 U.S.C. §112, Second Paragraph Rejection

The Office Action rejected claim 7 as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner asserts that it is impossible for the unspecified bit positions to be filled using both random filling and non-random filling methodologies. Applicants agree that this would be impossible for the same bit positions. However, claim 7 includes the limitation of claim 1 in which some (a plurality) of the unspecified bit positions are non-random filled and further includes the limitation in which a different portion (a second plurality) of the unspecified bit positions are random filled. Support for the combination of random and non-random filling can be found in the last paragraph on p. 24 of the present application. Claim 7 has been amended to clarify this aspect by specifying that a "second plurality" of the unspecified bit positions are filled using a methodology different from the filling methodology of claim 1. It is believed that the language of claim 7 now more clearly and distinctly defines the subject matter of the present invention.

The Office Action rejected claim 20 as being indefinite and for reciting unclear language. In response thereto, claim 20 has been amended to eliminate the phrase noted by the Examiner as being unclear. The language has been replaced with "using an algorithm to set the plurality of unspecified bit positions of the at least one test vector such that the at least one test vector can be compressed," which is believed to be clear and definite in accordance with 35 U.S.C. §112, second paragraph. If the Examiner would prefer that different language be used to describe this limitation, the undersigned would be pleased to discuss any possible alternatives.

It should be noted that claim 6 includes language similar to the language used in claim 20. Therefore, claim 6 has also been amended accordingly to replace the language that the Examiner holds to be objectionable.

Furthermore, claims 19 and 20 have been amended to remove the language "the step of setting," which appears to lack antecedent basis in the apparatus claims. This language has been replaced with "second means" in order to maintain

consistency with claim 15 from which these claims depend. In light of the amendments and remarks made herein, it is believed that all 35 U.S.C. §112, second paragraph rejections should be withdrawn.

Applicants wish to clarify that the foregoing amendments have been made for the purpose of better defining the invention in response to the rejections made under 35 U.S.C. §112, second paragraph. Applicant submits that no substantive limitations have been added to the claims based on prior art. Therefore, no prosecution history estoppel arises from these amendments.

Response to 35 U.S.C. §102 Rejection

Claims 1, 8-11, and 14 stand rejected under 35 U.S.C. §102(b) as allegedly being anticipated by *Chakradhar et al.* (U.S. Patent No. 5,726,996). Applicants respectfully traverse this rejection on the grounds that *Chakradhar et al.* fails to disclose each and every element of the claimed invention, as explained in more detail below.

Claim 1 includes generating a test vector for detecting a fault whereby a remainder of the bit positions in the test vector are left unspecified. Claim 1 further includes ***"setting the values of a plurality of the unspecified bit positions using a non-random filling methodology."*** The Office Action alleges that *Chakradhar et al.* sets the unspecified bit positions using a non-random filling methodology. The Office Action points to col. 10, lines 14-16 of *Chakradhar et al.*, which states: "We assume that the test generator does not randomly assign values to primary inputs and scan FFs that were left unspecified in the test sequence." The Office Action concludes that by not randomly assigning values to unspecified inputs, *Chakradhar et al.* hence teaches "setting values of a plurality of the unspecified bit positions using a non-random filling methodology."

Applicants respectfully disagree with the Examiner's conclusion. The fact that *Chakradhar et al.* "does not randomly assign values to primary inputs and scan FFs that were left unspecified" does not in any way suggest that "*Chakradhar* teaches setting the values...using a non-random filling methodology." Random filling is a conventional technique for dealing with unspecified values. The fact that Chakradhar et al. does not follow the conventional random filling technique does not imply that

the reference inherently produces the inventive step of setting unspecified bit positions using a "non-random filling methodology" as is claimed in the present application.

Referring to col. 10, lines 2-20 of *Chakradhar et al.*, it is taught that not all primary inputs and scan FFs have to be assigned values 0 or 1 to detect a target fault. *Chakradhar et al.* further states that, ideally, the test generator should assign values to as few primary input signals and scan FFs as possible to detect the target fault. *Chakradhar et al.* even goes on to suggest that it is possible to judiciously un-specify bits that were unnecessarily specified during test generation.

It should be clear from this paragraph that *Chakradhar et al.* teaches away from any technique for specifying unspecified bits and even suggests un-specifying bits that were already specified. When taken in context, the statement in *Chakradhar et al.* that "the test generator does not randomly assign values to primary inputs and scan FFs that were left unspecified" takes on a completely different meaning than the one suggested in the Office Action. Instead, this statement actually refers to the common practice of randomly filling unspecified bits and that this common practice is not being followed here in *Chakradhar et al.* There is no mention of setting bit positions using a non-random filling methodology, nor is there any motivation to do so. In fact, *Chakradhar et al.* prefers not to fill unspecified values, and even teaches away from filling techniques altogether.

It should also be noted that the claimed term "non-random filling methodology" is used in accordance with its common and ordinary meaning. It refers to a filling methodology that fills unspecified bit positions in a non-random manner. It does not refer, as suggested by *Chakradhar et al.*, that a random filling methodology is not performed at all.

For at least the reason that *Chakradhar et al.* fails to disclose "*setting the values of a plurality of the unspecified bit positions* ***using a non-random filling methodology,***" Applicants contend that this reference does not anticipate the present claims. Anticipation requires that each and every element of the claimed invention be disclosed in a single prior art reference. *See e.g., In re Paulsen,* 30 F.3d 1475, 31 USPQ 2d 1671 (Fed. Cir. 1994); *In re Spada*, 911 F.2d 705, 15 USPQ 2d 1655 (Fed. Cir. 1990).

Dependent claims 8-11 and 14 are believed to be allowable for at least the reason that these claims depend from allowable independent claim 1. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988).

Response to 35 U.S.C. §103 Rejection

Claims 2-7, 12, 13, and 15-20 stand rejected under 35 U.S.C. §103 as allegedly being unpatentable over *Chakradhar et al.* (U.S. Patent No. 5,726,996). Applicants respectfully traverse this rejection because *Chakradhar et al.* does not teach or suggest all of the claim limitations of independent claims 1 and 15. Furthermore, there is no motivation taught in the prior art to modify *Chakradhar et al.* to include the lacking features. Also, modifying the reference in such a way would destroy the intended functions taught in *Chakradhar et al.*, thereby providing no reasonable expectation of success.

In order to make a proper *prima facie* case of obviousness, three basic criteria must be met, as set forth in MPEP 706.02(j). First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art references, when combined, must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on Applicant's disclosure.

As mentioned above, *Chakradhar et al.* fails to teach or suggest ***"setting the values of a plurality of the unspecified bit positions using a non-random filling methodology"*** as claimed in independent claim 1. There is also no motivation to modify this reference to include this claimed feature. In fact, such a modification is contrary to the intentions of *Chakradhar et al.*, since the reference appears to avoid or even undo any type of filling technique. Any modification in this regard would thus destroy the concepts taught by *Chakradhar et al.* and would not provide a "reasonable expectation of success" in accordance with MPEP 706.02(j).

Similarly, *Chakradhar et al.* fails to teach or suggest ***"second means for setting a plurality of the values of the unspecified bit positions using a non-random filling methodology"*** as claimed in independent claim 15. *Chakradhar et al.* fails to

suggest any structure or means that sets unspecified bit positions using a non-random filling methodology. Instead, *Chakradhar et al.* teaches away from any type of filling whatsoever in col. 10, lines 2-20 and does not suggest filling by even conventional means, *i.e.* random filling. The reference suggests assigning values to as few primary input signals and scan FFs as possible to detect the target fault.

Contrary to the suggestion in the Office Action, *Chakradhar et al.* does not imply a non-random filling methodology when it suggests "not randomly filling." Instead, *Chakradhar et al.* suggests that no filling whatsoever is done. Since the reference does not implicitly suggest non-random filling as claimed, it is believed that independent claim 15 is allowable. It is well established at law that, for a proper rejection of a claim under 35 U.S.C. §103 as being obvious based upon a single reference, the reference must disclose, teach, or suggest, either implicitly or explicitly, all elements/features/steps of the claim at issue. *See, e.g., In Re Dow Chemical*, 5 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1988), and *In re Keller*, 208 U.S.P.Q.2d 871, 881 (C.C.P.A. 1981).

In col. 10, lines 2-20 of *Chakradhar et al.*, it is taught that not all primary inputs and scan FFs have to be assigned values 0 or 1 to detect a target fault, and ideally, the test generator should assign values to as few primary input signals and scan FFs as possible to detect the target fault. *Chakradhar et al.* even suggests that it is possible to judiciously un-specify bits that were unnecessarily specified during test generation. In this respect, *Chakradhar et al.* suggests that no filling is desired and that the filling process could perhaps be reversed, therefore teaching away from the concept of a non-random filling methodology as recited in the claims of the present application. A claim cannot be deemed obvious if the reference "teaches away" from the claim. *See In re Gurley,* 2 F.3d 551, 31 USPQ2d 1130, 1131 (Fed Cir. 1994) ("A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant... In general, a reference will teach away if it suggests that the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by the applicant.").

Finally, Applicants disagree with Examiner's statement repeated throughout the Office Action that "*Chakradhar* teaches that the test generator does not randomly

assign values to primary inputs and scan FFs that were left unspecified, hence *Chakradhar* teaches setting the values of a plurality of the unspecified bit positions using a non-random filling methodology." The fact that *Chakradhar et al.* "does not randomly assign values to primary inputs and scan FFs that were left unspecified" does not suggest in any way that *Chakradhar et al.* teaches "setting the values of a plurality of the unspecified bit position using a non-random filling methodology." Random filling is a conventional technique for filling unspecified values. The fact that *Chakradhar et al.* does not follow the conventional random filling technique does not imply that the reference inherently produces the present inventors' active step of setting unspecified bit positions using a "non-random filling methodology" as is claimed in the present application. For at least these reasons, Applicants respectfully request that the rejections over *Chakradhar et al.* be withdrawn and the present application passed to issue.

New Claims

Claims 21 and 22 have been added to further clarify the scope of the present invention. These new claims encompass the feature that the test vector is not only processed by the algorithms as defined in claims 6 and 20 so as to allow for effective compression, but also that the test vector is then actually compressed.

Prior Art Made of Record

The prior art made of record has been considered, but is not believed to affect the patentability of the presently pending claims.

CONCLUSION

In light of the foregoing amendments and for at least the reasons set forth above, Applicant respectfully submits that all rejections have been traversed and/or accommodated, and that the now pending claims 1-22 are in condition for allowance. Favorable reconsideration and allowance of the present application and all pending claims are hereby courteously requested. If, in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned agent at (770) 933-9500.

Respectfully submitted,

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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail, postage prepaid, in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on October 14, 2003.

Evelyn Sanders

Signature – Evelyn Sanders